DOCUMENT RESUME

ED 171 054 EC 115 263

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TITLE The Astor Program for Gifted Children Pre-Kindergarten Through the Primary Grades. Five Years Later - Evaluation and Problems of Transition.
PUB DATE Apr 79
NOTE 40p.; Paper presented at the Annual International Convention, The Council for Exceptional Children (57th, Dallas, Texas, April 22-27, 1979, Session T-76)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academically Gifted; *Administrator Attitudes; Exceptional Child Research; Followup Studies; Gifted; *Parent Attitudes; Preschool Education; Primary Education; *Program Effectiveness; *Special Programs; *Student Attitudes
IDENTIFIERS *Astor Program for Gifted Children

ABSTRACT

The paper describes the Astor program for prekindergarten through primary age intellectually gifted children, and presents findings of a 5-year followup on the effect of the program on children's growth. Outlined are the program's major goals (including the promotion of continuing research, experimentation, and education of gifted in New York City public schools at all levels); activities (such as establishing early identification procedures and developing classroom management procedures consistent with the nature and needs of the students); impact on citywide politics; impact on district policies according to district superintendents; and impact on schools according to school principals. Also presented are the views of principals and parents regarding impact on the children. Noted among findings are that a significantly high proportion of parents reported positive behavioral reactions by their children to the Astor Program experience; that Astor Program children made significant achievement gains in world knowledge, total reading, and total mathematics; and that children not only liked school, but also were happier in the Astor Program than they had been in other classes. Also discussed are the following topics of concern: financing, pupil identification, pupil followup, promotion policies and acceleration, teacher selection, teacher training, class size, classroom practices and management, role of the school principal, and continued application of the Astor Program philosophy. (SBH)

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THE ASTOR PROGRAM FOR GIFTED CHILDREN PRE-KINDERGARTEN THROUGH THE PRIMARY GRADES
Five Years Later - Evaluation and Problems of Transition

Presentation at CEC Conference - Dallas, Texas - April 22-27, 1979
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EC 115263

INTRODUCTORY REMARKS

In previous talks on the subject of the Astor Program, we focused on aspects of a program in process, speculating on its potentials, and expressing the hope that all our efforts would lead to success. We had no evidence that our efforts would lead to any different results than might have been obtained if the children in our program had attended other schools or continued in situations in which their giftedness was not even recognized.

Today, you will forgive me if I sound exuberant. We asked ourselves, the question: What did the Astor Program children gain by the special program designed for them? Since the program had been designed as a research study, we had an evaluation plan which we followed and from which we hoped to gain the answers we were seeking. All our data have led to the very satisfying conclusion that "Yes, it did make a difference." Planning a program specifically for gifted children and following through on our goals and curriculum design did produce most satisfactory results.

WHAT IS THE ASTOR PROGRAM?

The Astor Program was designed for intellectually gifted pre-kindergarten and kindergarten children, and later it was expanded to the subsequent primary grades as we followed the children from the time of

*Several sections of this report are based on excerpts from: The Astor Program for Gifted Children: Pre-Kindergarten through Grade Three, by Dr. Virginia Z. Ehrlich, New York: Teachers College, Columbia University (10027), 1978.

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admission to the present. Our earliest children are now in the fifth and sixth grades.

All children were selected by multiple criteria, including the administration of a Stanford-Binet test. Most of the children in the program had IQ's of over 140.

This is a full time program in the New York City public school system. It grew from two classes in 1974 to approximately forty in the fall of 1978, and it is currently being implemented in eight of the city's 32 school districts. These eight districts serve approximately one-fourth of the school population of about 1,000,000 children, or 250,000 children.

Institutionalization was a primary goal of the program. It began in a format that explored "ideal" teaching conditions and ways of adapting these to the exigencies of a complex and varied school system struggling under severe budget restrictions and personnel losses, combined with general resistance to any programs for the gifted.

Major Goals of the Astor Program

The major goals of the Astor Program were two:

1. To promote continuing research, experimentation, and education of the gifted in New York City public schools at all levels.
2. To implement a "host school" concept for gifted children on two levels:
    a. For children aged four and above who show unusual evidence of academic ability.
    b. For students in regular grades who have exceptional ability and cannot be accommodated by their local schools.

The first goal of the Astor Program is not as well known as the early childhood classes have become, yet it was the more significant of the two goals. Its impact was on the entire school system and literally reversed the negative trend of education for the gifted.

Activities planned under this goal included:

1. Full-time availability of the director as consultant and resource to all branches of the city school system on subjects related to the gifted.

2. Funding for dissemination of information and educational materials.

3. Conducting Citywide Conferences on the Gifted where personnel could become acquainted with what was going on within and outside the city.

4. Continued participation by the director in conferences held by national, state and regional organizations where the gifted was a major topic of discussion.

The term "Astor Program for Gifted Children" has become associated primarily with one aspect of our second goal: the establishment of classes for the intellectually gifted beginning at age four.

The activities planned under this category were broad in scope:

1. To establish procedures for early identification of the gifted.

2. To establish "host" classes in central locations for children in the top one percent of intellectual ability.

3. To develop classroom management procedures that would be consistent with the nature and needs of the pupils.

4. To develop a "differentiated" curriculum that would reflect what is known about the learning needs of the gifted.

5. To plan our work in such a manner as would insure the ultimate institutionalization of the program, independent of private funding.

IMPACT OF THE PROGRAM ON CITYWIDE POLICIES

Did we accomplish the task we set ourselves? Did we change the thinking of a city school system with respect to its gifted pupils? Did we introduce an awareness of the problems and make available the essential information to resolve as many as possible? We can only judge by the present status of education for the gifted in New York City.

In 1972, education of the gifted in New York City had reached its lowest point since 1942. In 1972, a gifted child had to attend his local school, even if it had no provisions or program for the gifted. As a direct result of the Astor Program grant, an addendum was made to the city's promotion policy in which school districts were told that parents had the right to request a transfer for their child to another school within the district that could meet the child's educational needs. If the district had no way of meeting his needs, the parents had the right to request a transfer to another school district where the child's needs might be met. An interesting result of this policy was that many districts became concerned about keeping their gifted populations and began making provisions for the gifted.

In 1972, there was no mention of the gifted in the education budget of the city. By 1977, there was a budget line for the gifted in the Central Board's plans, and every district had received an allocation of funds for these children. In 1972, no district had a program plan for educating its gifted children; in 1977, there were twelve districts with program plans in varying stages of development. In 1972, classes and programs for the gifted

were either non-existent in school districts or were rapidly vanishing; since 1972, there has been a resurgence of interest in these classes and new ones are opening up rapidly. In 1972, it was virtually impossible to find persons at supervisory levels or teachers with sufficient knowledge to give guidance and training in education of the gifted; in 1977, there were cadres of such personnel in many school districts who were passing on to others what they had learned. In 1972, there were few persons interested in the area of the gifted and no conferences were available within the city on the subject; in 1977, there were so many institutes and conferences in the metropolitan area that we no longer felt it was necessary for us to continue our own efforts in this area. We had almost reached the point of duplication of activity.'

IMPACT OF THE PROGRAM ON DISTRICT POLICIES: SUPERINTENDENTS' REACTIONS

District Superintendents were favorably disposed to the program and their enthusiasm grew with experience. They invited legislators (State Senators and Assemblymen), Regents, State Education Department representatives to visit the classes in their districts. If they had any doubts at first, after three and one half years, they were all ardent supporters of the program. They added classes and schools; they persuaded their local school boards to commit tax levy funds; they assigned members of their staffs to act as local coordinators. Their reactions may be summarized in these excerpts from letters they wrote to the project director.

> "The impact of the program on the community, the school, other classes and curriculum practices - all have been most positive and extremely beneficial to our district. Parent involvement has been most supportive, pupil selection has been effective and in-service training has been arranged for the new school year."

"Within the past year we have:

Organized a District Committee for Education of the Gifted.

Appointed a screening committee to select intellectually gifted students for the program.

Drafted a district plan for the education of the gifted.

Organized a resource center of materials on the Education of the Gifted.

Commenced to reevaluate all gifted programs within the Community School District.

Assisted in organizing a parents' group for those whose children attend the Astor classes."

"In three years, one class grew to seven, 24 children to 160. (We plan to add three new classes in the fall of 1977)."

"The contribution of our District in terms of tax levy funds grew from a few per cent of the budget to around 75%. This largely due to the training you arranged through the Leadership Training Institutes."

"Besides the Astor classes we started together, several of our elementary schools have formed curriculum committees for improving classroom strategies for responding to the needs of gifted children. A district committee on the gifted, in-service courses, the creation of a district resource center for the gifted . . . all resulted from your influence . . . and benefit all our children."

"The value of the program to the community was in making the public sensitive to the need for making provisions for gifted children. People have moved to our area to be closer to the classes. Our residents have not joined the flight from our borough or (as an alternative) sent their children to private school because the Astor classes were available. Because our school board recognized this, budget provisions could be made for classes to grow."

"The regular classes in the schools housing the Astor classes will begin sharing the curriculum guides the project teachers developed. . . . There will be greater opportunities for cross-fertilization next year now that four levels are in being. We anticipate a favorable impact. In essence, we think we know now that a great deal more may take place in the instructional day than we thought possible."

IMPACT OF THE PROGRAM ON SCHOOLS: PRINCIPALS' REACTIONS

Principals had to be concerned with the impact of the program on the rest of the school. Following are some sample responses to questions we asked.

Question: What has been the impact of Astor Program classes on other classes in the school? With respect to curriculum practices?

"Some early indications are the use of health education materials, techniques, and music experiences have been encouraged. Materials shared with other teachers."

"We provided for continuing interaction between classes in a number of areas, such as Consumer Education, Movement Education, Dance Festival, music activities, special lunch programs, including song, dance, and improvised socio-drama."

"The teachers of the kindergarten, the Astor class and the CRMD classes have shared and planned cooperatively . . ."

Question: What has been the effect on the relationships between teachers of having Astor Program classes in the school?

"The teachers involved were able to provide their colleagues with a wealth of ideas regarding special activities for the gifted children."

"No discernible change. Teacher was and is well liked, respected among colleagues."

"This program, I believe, has served to stimulate thinking about enrichment for all children."

Question: What has been the general impact on the school of having Astor Program classes?

"The impact has been a most positive one. Astor Program teachers have served as resource personnel at a variety of grade and faculty conferences. The children have formed important friendships with the 'mainstream' youngsters at our school. The unique learning tone established in the program has enhanced the existing superior learning climate at our school."

"We now think in terms of gifted. The impact has not been great. In this school, many of our teachers have realized that programs for the gifted are needed."

"There has been greater parent involvement. When other classes are involved in grade programs they seem to be stimulated by our Astor children."

Question: How do you view your role in the continuation of classes following Astor Program practices?"

"I strongly believe that, without my support, these practices and the entire program cannot succeed. I must take the lead and show all that I am committed."

"I have been actively involved and will continue to be. I shall directly supervise these groups. I believe that I have established a fine working relationship with the teachers and this will continue."

"By checking the plans of the Astor teachers, spending time in their rooms and discussing their programs with them I can inform other teachers about their practices, and encourage them to use some of them in their classes."

"Critical with respect to selection of teacher and educational assistant and guidance in selection and ordering of material important in terms of general supervision. I cannot replace, as one individual, the teacher training sessions and cooperative sharing."

"As facilitator of ideas and practices."

Organizationally, all principals favor full-time homogeneous grouping for the gifted. They feel, generally but not unanimously, that Astor Program children would not have done equally well in heterogeneous, regular classes. One felt that much depended on the teacher. All, however, were eager to continue the classes and viewed their roles as mediators between school and community. Generally, they thought that they had an important role to play in continuing Astor Program practices.

THE RESULTS: DID IT MAKE A DIFFERENCE?

There are those who feel that a gifted child will thrive in any school situation. They believe the child will learn and master the curriculum content simply because he is gifted. They are strengthened in this belief by the superior performance of many gifted youngsters for whom no special

provisions have been made. The question that is not addressed by this approach is: "How much more might the child have learned if special provisions had been made for him?" What did Astor Program children gain by the special program designed for them? For answers we must look to both subjective and objective data. These include observations by school principals and parents, as well as results of standardized achievement tests in reading and mathematics and a scale of attitudes toward aspects of schooling.

The Principals' View

We asked principals whether they believed Astor Program children would have fared as well in a regular classroom as they did in the Astor Program. The unanimous response was "No." All believed that the Astor Program made a real and favorable difference.

The Parents' View

Since it was parents, in particular, who protested that school systems were not meeting their gifted children's needs, their opinions are of utmost importance. How did Astor Program parents view their children's education under the special program? When asked whether the Astor Program should be continued the parents were unanimous in their response, a resounding "Yes!"

More than one-third the parents of Astor Program children wrote unsolicited letters in which they expressed their personal satisfaction with the program. These letters form a treasured collection in the director's files. A sampling of their comments follows:*

*All pupils' names have been changed.

SAMARIE'S PARENTS

"It needs something more than words to express what the Astor Program has been doing to our daughter. We are just trying to put into words that intangible magic the program has worked on her. . . . .

"Her reading skills are growing fast. We are very pleased when she reads, writes and spells the words that are supposed to be beyond a child of 5. She has grown much more inquisitive now than she ever was. This must be the magic wand of the Astor teachers behind this thirst to know more. May their magic grow stronger and stronger!!! . . . .

"We are often left aghast at the paintings and drawing she does in the school. It sure is the outcome of Astor training. Having seen her growing from finger painting to water colors via crayons, we often wonder, what next? All because of the Astor Program, thanks again!!! . . . .

"Elation is the one word to sum up our feelings when we see all the kids mingling with each other, appreciating each others' work. They have received exposure in the newspapers and some have even hit the T.V. May God grant more power to this Program replete with love for each other!!!"

MARY'S PARENTS

"My husband and I have witnessed an amazing change in her development over the past months. She has become extremely verbal, self-confident, mature, independent, and orderly. She has assigned herself chores at home, loves homework assignments, is speaking French, putting on plays, sings and dances, writes stories, draws, makes exhibits, but most of all she is happy as can be and looks forward to school each day with eager anticipation. . . . ."

TERRY'S MOTHER

"Terry began the Astor Program in February of this year. Within a period of a few weeks I began to see a beautiful change take place. My son became much more articulate. His vocabulary practically tripled in this short span of time. His mind seemed to open up to the world around him. He began "experimenting," as he so aptly expressed it. The knowledge he has gained is particularly noticeable in the areas of the alphabet and numbers. . . . .

"All of the above is quite remarkable in itself but there is something even more wonderful that must be added to this to complete the picture. Terry has become aware of himself and his own capabilities. He has gained so much confidence that he tackles things which would have, in the past, turned him off. He has come to accept the fact that he is bright and can relate to his sister who is also very bright but has the

advantage of being older. He has learned to put his intelligence to work for him and I am sure that this lesson will follow him throughout his life. . . ."

MELINDA'S PARENTS

"What I most appreciate is the air of freedom and spontaneity in the classroom, although I know the planning that must go into each day. Given the wide range of interests among these children, the questions never seem to be put aside, but are somehow integrated into the total learning experience. .

"I must also add that the warmth and affection shown the children has probably contributed much to the success of the Astor Program. . . ."

At the end of each school year, we asked parents to return a questionnaire in which we asked questions specific to the children's learning and reactions to the program. There was a return of almost 99 per cent on these questionnaires. A report on these responses follows.

Question: Have you observed any growth in your child's abilities in each of the following areas?

In Table 1 there is a summary of the parents' responses to this item by grade level and for all classes from 1974 through 1977. It also gives a breakdown in terms of specific responses, "Yes," "No," "No Change," and "No Data."

It is clear from Table 1 that an overwhelming majority of the parents noted pupil gains in all the curriculum areas at all grade levels. An impressive 92.3 to 95.1 per cent noted growth in vocabulary; 79.9 to 88.2 per cent noted gains in reading; 86.5 to 87.8 per cent, in use of language; 82.1 to 97.6 per cent, in mathematical skills; 70.7 to 84.6 per cent, in science skills; 80.8 to 90.2 per cent, in social living. The least number of favorable responses, though clearly in the majority, were in the areas of art (65.9 to 72.7 per cent), music (63.4 to 77.1 per cent), and foreign language (59.2 to 78.1 per cent). It should be noted that not all classes had foreign language teaching.

Table 1

PARENTS' OBSERVATIONS OF PUPIL GROWTH
IN CURRICULUM AREAS

All Classes: 1974 - 1977

(In Per Cents)

Level and Area	Yes	No	No Change	No Data
Level I (N = 363)				
Reading	79.9	4.7	14.9	0.6
Word knowledge	92.3	0.8	6.1	0.8
Use of language	86.5	2.2	9.6	1.7
Mathematical skills	82.1	4.7	11.0	2.2
Science skills	79.9	6.6	9.4	4.1
Social living	81.0	4.4	11.3	3.3
Art	72.7	8.3	15.7	3.3
Music	71.1	9.1	16.8	3.0
Foreign language	59.2	18.5	16.0	6.3
Level II (N = 136)				
Reading	88.2	0.7	10.3	0.7
Word knowledge	94.1	0.0	4.4	1.5
Use of language	87.5	0.7	8.1	3.7
Mathematical skills	88.2	2.9	4.4	4.4
Science skills	84.6	4.4	7.4	3.7
Social living	80.8	4.4	9.6	5.2
Art	70.6	10.3	16.9	2.2
Music	69.1	8.1	18.4	4.4
Foreign language	73.5	11.8	9.6	5.2
Level III (N = 41)				
Reading	82.9	4.9	9.8	2.4
Word knowledge	95.1	0.0	4.9	0.0
Use of language	87.8	2.4	7.3	2.4
Mathematical skills	97.6	2.4	0.0	0.0
Science skills	70.7	14.6	14.6	0.0
Social living	90.2	0.0	9.8	0.0
Art	65.9	17.1	17.1	0.0
Music	63.4	17.1	19.5	0.0
Foreign language	78.1	7.3	12.2	2.4

Question: How does your child seem to behave since joining the Astor Program?

In Table 2, there is a summary of the parents' evaluation of their children's reactions to the Astor Program classes as of June, 1977. A significantly high proportion of parents reported positive behavioral reactions by their children to the Astor Program experience. They describe their children as being happier (58.5 to 66.2 per cent), more sociable (55.9 to 73.2 per cent), more interested in schooling (62.5 to 73.2 per cent), enthusiastic about learning (80.5 to 86.8 per cent), eager to go to school (70.6 to 82.4 per cent), since joining the Astor Program. They tell us that the children seem to have a great deal to talk about (75.6 to 78.7 per cent), have acquired new interests (73.2 to 83.1 per cent), like their teachers (82.9 to 92.8 per cent), and their classmates (80.2 to 87.3 per cent), and have acquired many new friends (82.4 to 89.0 per cent).

It is the rare parent who reports a child who is bored, tired, withdrawn, restless, unhappy, indifferent, or weepy.

Thus, parents noted gains in both congnitive (Table 1) and affective (Table 2) areas of growth, and seem to be very well satisfied with the impact of the program on their children's education.

During 1977-1978, after control of the program passed to local school disticts, we sent a follow-up questionnaire to all parents whose children had been admitted to the program since February, 1974. This included those who had been transferred to other schools, as well as those who were still actively participating in classes we had started. About 260 or more than one-half the parents who had participated in the program from 1974 through June, 1977 responded to this request for information.

Table 2

PARENTS' EVALUATION OF PUPILS' REACTIONS
TO ASTOR PROGRAM CLASSES

All Classes 1974 - 1977

(In Per Cents)

Pupil Reactions	Level I N = 363	Level II N = 136	Level III N = 41
Happier	64.5	66.2	58.5
More at ease	44.6	45.6	46.3
Less restless	30.5	33.1	34.1
More sociable	55.9	61.0	73.2
More interested in schooling	69.4	62.5	73.2
Enthusiastic about learning	86.8	81.6	80.5
Eager to go to school	82.4	70.6	73.2
Gets along better with siblings	22.0	22.1	29.3
Has made some friends	89.0	82.4	87.8
A great deal to talk about	78.2	78.7	75.6
Has acquired new interests	77.4	83.1	73.2
Likes teacher(s)	92.8	83.8	82.9
Likes children	87.3	80.2	80.5
Bored	1.7	2.9	2.4
Tired	1.1	4.4	4.9
Withdrawn	0.6	0.0	0.0
Restless	2.8	4.4	2.4
Unhappy	0.6	0.7	2.4
Indifferent	0.8	2.2	4.9
Weepy	1.4	0.7	0.0
Does not like school	0.3	0.7	4.9
Dislikes teacher(s)	0.8	0.7	9.8
Dislikes children in class	1.7	0.0	0.0
Seems lonely	1.7	0.7	0.0

We asked parents to list some of the long-lasting benefits to their children of participating in the Astor Program. The following are some of their comments:

"His teachers have encouraged his uniqueness."

"He was introduced to school in such a favorable manner that his attitude toward it will always be positive."

"She was given the opportunity to attend school when she was ripe and ready, although not of age. She's been allowed to think and discover for herself. Learning is a joy rather than a drudgery."

"A willingness to look over and analyze new ideas and horizons, and the self-assuredness to tackle a new problem."

"He approaches math and writing assignments with gusto."

"Increased self-esteem and faith in his ability to take on a new challenge."

"He has never felt 'different' in a classroom situation."

"The Astor Program has helped us better understand his learning needs."

"A knowledge of things I would never have brought up to a five- or six-year-old."

"Ability to get along and empathize with children of different talents."

"The ability to think on his own and to reason out why he's reached a certain conclusion."

"Opportunity to socialize during school."

"Mainly he has had the benefit of a varied and enriched program with the individual attention and understanding necessary to build a foundation of self-assurance and curiosity and skills."

We also asked parents about special interests their children may have developed as a consequence of their participation in the Astor Program. A sampling of these interests follows (in order of frequency, N=260:)*

Music (14.2 per cent)

Art (13.8 per cent)

Mathematics (13.5 per cent)

Reading (13.5 per cent)

Natural Science (11.9 per cent)

Overall interests and creativity (10.0 per cent)

Physical Science (5.9 per cent)

Creative Writing (5.4 per cent)

Foreign Language (4.2)

Poetry (3.5 per cent)

Vocabulary (3.1 per cent)

Dramatics (2.7 per cent)

Parents also cited individual interests, such as architecture, statistics, backgammon, sculpturing, puppetry, stamp collecting, gardening, chess, coin collecting, geography, and sewing.

*There was some duplication in parent responses, therefore, percentages will exceed 100 per cent.

Comments on the Objective Data

Because of the nature of our population and financial limitations, it was not possible to obtain a control group to match our Astor Program pupils. Working with controls is usually quite difficult for all city pupils. Several factors act as deterrents. The first is pupil mobility, which requires the use of a control group four to five times as large as the experimental group if a statistically reasonable number are to remain available throughout the period of the study. A second factor, of course, is the cost involved in testing a large enough population to identify pupils of comparable ability. Third is a factor peculiar to the Astor Program. We had selected children who were in the top one per cent in intellectual ability. During the selection process, we identified a number who were so exceptional as to be scarce in any population and, somehow, we seem to have reached most of those who were available. After all, how many children can one hope to identify whose I.Q.'s are 4.0 standard deviations above the mean, with a probability of 28 in 1,000,000? We had 14 of these in the Astor Program.

Achievement Testing

Another problem in testing our pupil population arose from the fact that they were so young yet achieved at high levels. Within one class group, we had to use three and four levels of the tests, which one would not ordinarily administer in the lower grades. However, we found that children easily reached the 90th percentile and above on those tests designed for their age groups, leaving no room for growth on a post-test. The test levels administered to our kindergarten through grade three children included the following, and were used according to individual levels of performance.

MAT Test Level	Designed for Grades
Readiness	Pre-K
Primer	K.7-1.4
Primary I	1.5-2.4
Primary II	2.5-3.4
Elementary	3.5-4.9
Intermediate	5.0-6.9
Advanced	7.0-9.5

By using standard scores, it was possible to compare across all test levels. All our data are based on analysis of standard scores, with conversion to grade equivalents for explanatory purposes only.

Comparing the achievement of gifted children with the general population used in large-scale testing by the standardized achievement tests is not an appropriate procedure either, since it is known that scores for the population extremes are extrapolated and not too reliable. Adjustments have to be made in expectation levels for both low- and high-achievement groups.

An advantage of using the Metropolitan Achievement Tests was the fact that data were available on the expected standard score growth rates of above average groups (stanines 7, 8, and 9). Thus, it was possible to compare the growth rates of Astor Program pupils with the expected rates for high achievers, as reported by the test publisher.

The data used as a control reference were prepared by Michael B. Beck in a paper presented at the 1975 Convention of the National Council on Measurement in Education.

Beck's data are based on a representative sample of the total testing population used to standardize the Metropolitan Achievement Tests. The pupils are well sampled on the basis of median family income, per cent of Black residents, and median deviation I.Q.'s. His data are superior to the total normative sample in that he used the same pupils in his pre- and post-test data. The total population sampled was almost 15,000 cases, with about 2860 pupils in grade 2 and about 1650 in grade 3.

The most interesting aspect of Beck's data for our purpose was the growth expectancy for high achievers as compared with low achievers. Contrary to what one might believe, on a standardized achievement test such as the Metropolitan, growth expectancy for high achievers is considerably lower than for low-achievers. Although one may comfortably choose to ascribe the large differences in standard score expectancy to the effects of statistical regression, it is our feeling that this is not the whole story. Why should not a child who achieves at an above-average level on a pre-test make gains that are consistent with his superior achievement, rather than almost stand still while his less able peers make three to four times the score gains he makes? For example, on Word Knowledge the expected gain over six months for a low achiever is a mean of 13.8 standard score units. During the same period, a high achiever is expected to gain only 3.8 units. Our thesis is that the major reason for this phenomenon at the lower grade levels is not statistical regression but rather teaching regression. The bright child has "already arrived" and, generally, there is little concern with letting him progress at his own rate. He just "waits" while others catch up. It was this type of observation that led us to try to change what happened in the classroom for the gifted child.

How do gifted, high achievers fare when they are encouraged to use their maximum abilities? Let us examine the data available to us from the Astor Program classes. In order to make our data comparable to the Beck tables, we have made adjustments for elapsed time span between testings. Our testing covered a span of approximately nine months, while Beck's data are for a six-month period. By adjusting the average expectancy, we can establish a more valid basis of comparison.

All data reported here must be interpreted with utmost caution. We have tried to present the most conservative interpretations, but the underlying limitations of our data must be considered carefully. These are a few of the problems to be noted.

1. The pupils' abilities required use of tests designated for much higher grade levels in many cases.

2. Conversion to grade equivalents is almost meaningless, since the test levels used were usually beyond the ranges of the pupils' actual grade levels.

3. Beck's pre-post test interval was six months. The Astor Program pre-post interval was nine months. Beck's data have been "corrected" for this in our tables again based on theoretical rather than empirical information.

4. Beck's data begin at grade two. Most of our children had not reached grade two even by the post-test date. We have used the grade 2 figures given by Beck merely as an indicator of what might be expected at the early grade levels. We felt quite comfortable with this procedure, since the Beck rates for grades 2 and 3 are higher than for most other grades, thus forcing us to make an even more conservative analysis.

The two-stage analysis presented here does mitigate most of these problems and permits only the most conservative conclusions.

Stage 1. The basic analyses, comparing testings over a nine-month school interval, is the conventional technique and can be interpreted without any of the foregoing qualifications. The following information will be helpful in interpreting the data presented in Table 3. The Level II children were technically in kindergarten or grade one at the time of the first testing. Since they were about equally divided in each grade, they may be considered to be at grade 1.4 on the average on the initial test. Level III children were in grades one and two, also about equally divided. On the average, their initial average grade assignment would be 2.4.

Table 3 presents a summary of the mean standard scores achieved by the Astor Program children in Levels II and III (1977) and about nine months earlier (1976) when they were in Levels I and II respectively. Three test scores are compared for the Metropolitan Achievement Tests (MAT), in Word Knowledge, Total Reading, and Total Mathematics.

In Word Knowledge, Level II pupils gained 13.8 score units and achieved at an average grade equivalent of 3.2. Their average initial grade equivalent was 2.0. Level III children also made significant gains from a mean initial score of 69.1 to a score of 78.1, and progressed from an average grade equivalent of 4.4 to 5.8.

In Reading, the Level II pupils had a mean score gain of 15.0, advancing from an average grade equivalent of 1.9 to 3.1. The Level III children had a mean score gain of 10.8, advancing from a mean grade equivalent of 4.3 to 5.7.

Table 3

STANDARD SCORE GAINS ON ACHIEVEMENT (MAT)
FOR PUPILS IN LEVELS II AND III
1976 - 1977 (9 School Months)

		N	1976 Mean	1976 S.D.	1977 Mean	1977 S.D.	r	p
Word Knowledge								
Level II	Boys	47	43.6	11.90	56.6	11.75	.781	.0005
	Girls	45	47.3	13.73	61.8	12.56	.707	.0005
	Total	92	45.4	12.96	59.2	12.43	.747	.0005
Level III	Boys	22	70.4	11.17	78.7	10.79	.929	.0005
	Girls	21	67.7	9.67	77.6	9.27	.560	.0005
	Total	43	69.1	10.55	78.1	10.09	.775	.0005
Total Reading								
Level II	Boys	47	39.7	11.18	54.2	12.33	.790	.0005
	Girls	45	44.7	13.78	60.2	11.29	.837	.0005
	Total	92	42.1	12.77	57.1	12.21	.814	.0005
Level III	Boys	22	70.1	13.81	79.1	12.79	.849	.0005
	Girls	21	66.5	9.25	79.2	10.43	.843	.0005
	Total	43	68.3	11.94	79.1	11.70	.833	.0005
Total Mathematics								
Level II	Boys	41	35.5	7.99	56.2	13.62	.732	.0005
	Girls	42	35.6	7.87	55.4	9.86	.674	.0005
	Total	83	35.5	7.93	55.8	11.87	.699	.0005
Level III	Boys	18	64.7	12.56	77.3	13.27	.822	.0005
	Girls	18	64.1	10.89	77.9	10.04	.891	.0005
	Total	36	64.4	11.76	77.6	11.78	.846	.0005

In Mathematics, the Level II pupils achieved a mean score gain of 20.3 advancing from an average grade equivalent of 1.5 to 2.6. The Level III pupils achieved a mean score gain of 13.2, advancing from an average grade equivalent of 3.3 to an average of 4.5.

Although it is reasonable to expect some achievement gains over a nine-month period of schooling, the data presented in Table 3 have important implications. All gains made, by both boys and girls, at both grade levels, are highly significant and consistently so for all the tests. ($p \leq .0005$). These were such dramatic gains that we carefully reviewed our entire procedure and double-checked our calculations. One rarely obtains such consistency in statistical data, as years of experience have demonstrated.

We are particularly pleased with the consistency of pupil performance over the test period. Higher-achieving children made gains "consistent" with their initial performance in most cases, as the correlations (Table 3, r) show. All of the correlations listed were statistically significant.

Thus we can reasonably conclude that Astor Program children made significant achievement gains in Word Knowledge, Total Reading, and Total Mathematics. This conclusion is consistent with the parents' observations of their children's gains in these curriculum areas.

Stage II. Would these gains have been statistically significant if the Astor Program children had been compared with an independent control group? Since we cannot use the general normative population, we have compared our data to a more appropriate group, Beck's high achiever nationally

tested population. A comparison of the gains made by Astor Program children and this normative population is presented in Table 4.

The lowest grade for which Beck presents expected gains is two, and these are the bases of our comparisons. We do not hesitate to use these expected gains, since they tend to be among the highest for the lower grades that Beck reports. Thus, we are establishing a rather high standard for our children. Nevertheless, in all groups and over all tests, Astor Program children exceeded the expected national norm gains by a good margin. Therefore, if we had any doubts about accepting our conclusions from Table 3, they would have to be dispelled by the comparisons with Beck's data in Table 4. The foregoing data demonstrate that high achievers can and do perform at levels that are consistent with their abilities when something happens in their classrooms to challenge them.

Table 4

COMPARISON OF ASTOR PROGRAM PUPIL GAINS IN ACHIEVEMENT WITH A NATIONAL NORMATIVE POPULATION OF HIGH ACHIEVERS

(In Standard Score Units)

Test and Group	GAINS		
	National Norm *(Expected)	Astor Program (Actual)	Difference (Astor - Expected)
**Word Knowledge			
Level II	5.7	13.8	+ 8.1
Level III	5.7	9.0	+ 3.3
**Total Reading			
Level II	10.1	15.0	+ 4.9
Level III	10.1	10.8	+ 0.7
**Total Mathematics			
Level II	10.6	20.3	+ 9.7
Level III	10.6	13.2	+ 2.6

*Adjusted for time interval.
**Metropolitan Achievement Tests.

Pupil Attitudes Toward Aspects of School

Since many of the pupils were too young to be expected to handle a sophisticated attitude scale, we resorted to a very simple format to obtain their reactions to various aspects of school - the school in general, their teachers, classmates, learning, reading, mathematics, and class meetings. The scale had three faces - happy, neutral, and sad - under which the child was to indicate his reaction to each of these aspects.
The test was scored on a scale of 2 for favorable, 1 for neutral, and 0 for negative responses. Provision was made for responses about two teachers, since there were usually two in each of the classrooms. Where there was only one, the child was told to omit the item. Our examiners found no difficulty in administering this very simple scale to the very young children, including the non-readers. The tests were administered to children at the end of the second and third years of attendance in the program and Table 5 represents the results over both years of testing.

It is not surprising that all of the means reported reflect positive attitudes. In a much more complex, factor-analytic study of dimensions of attitude toward school *, the writer found that children's attitudes toward various aspects of school are generally positive, contrary to popular belief. It is only as they move up through the grades that children begin to develop less positive attitudes. In any case, it is quite difficult to devise a scale where one can elicit negative responses. The curve of responses on attitude scales tends to be a J-curve, with the peak at the positive end. Thus, the results obtained here merely confirm what we already know about children, that they like school and many aspects of its make-up.

*Virginia Z. Ehrlich, Dimensions of Attitude toward School Unpublished doctoral thesis. New York: Teachers College, Columbia University, 1968.

Table 4

MEAN SCORES ON SCALE OF ATTITUDE TOWARD ASPECTS OF SCHOOL
FOR ALL PUPILS IN LEVELS I, II, III

1975-76 and 1976-77 School Years

Attitude toward:	Sex	Level I N	Level I Mean	Level II N	Level II Mean	Level III N	Level III Mean
School	Boys	151	1.77	89	1.31	25	1.36
	Girls	149	1.72	77	1.39	25	1.40
	Total	300	1.75	166	1.35	50	1.38
Teacher #1	Boys	151	1.77	89	1.61	25	1.56
	Girls	149	1.80	77	1.71	25	1.64
	Total	300	1.78	166	1.66	50	1.60
Classmates	Boys	151	1.73	89	1.66	25	1.80
	Girls	149	1.74	77	1.55	25	1.76
	Total	300	1.73	166	1.61	50	1.78
Teacher #2	Boys	108	1.81	73	1.44	25	1.76
	Girls	110	1.91	64	1.64	25	1.88
	Total	218	1.86	137	1.53	50	1.82
Learning	Boys	151	1.64	89	1.64	25	1.48
	Girls	149	1.72	77	1.65	25	1.56
	Total	300	1.68	166	1.64	50	1.52
Reading	Boys	151	1.66	89	1.67	25	1.84
	Girls	149	1.66	77	1.73	25	1.84
	Total	300	1.66	166	1.70	50	1.84
Mathematics	Boys	151	1.56	89	1.49	25	1.44
	Girls	149	1.48	77	1.23	25	1.64
	Total	300	1.52	166	1.37	50	1.54
Class Meeting	Boys	151	1.54	89	1.34	25	1.52
	Girls	149	1.59	77	1.34	25	1.28
	Total	300	1.56	166	1.34	50	1.40
*Total (1 teacher)	Boys	43	12.42	16	12.19	--	
	Girls	39	11.72	13	11.31	--	
	Total	82	12.09	29	11.79	--	
**Total(2 teachers)	Boys	108	13.18	73	11.85	25	12.76
	Girls	110	13.62	64	12.09	25	13.00
	Total	218	13.40	137	11.96	50	12.88

*Maximum score = 14 (one teacher)
**Maximum score = 16 (two teachers)

Over all, the Level I children reported the most favorable reactions to school and its several aspects. As is consistent with general experience, the scores declined in Levels II and III, although still remaining generally positive.

It will be seen from the table that most children had very favorable attitudes toward their teachers and classmates, with the Level II children somewhat less favorably inclined than their peers in Levels I and III.

The least popular school activity across all levels was the class meeting, while mathematics remains, generally, a borderline subject, with many children reacting in the neutral or unfavorable category.

We do not have data on the validity and reliability of this scale, and present the results only as indicators of the direction of pupil reactions. Their significance lies in their consistency with parent observations.

Since we did not have a control population against which to match our pupils, we could not establish whether there was too much significance to the relatively high positive scores obtained. As we did with the achievement scores, we sought responses elsewhere to support our conclusion that the Astor Program children were enjoying their experience and liked school. These data were reported in the section on "Subjective Data," in which we asked parents about their children's reactions. (See Table 2.)

Based on these responses, we can conclude not only that the children liked school, but also that they were happier in the Astor Program than they had been in other classes.

SUMMARY

The major question is: Does it make a difference in pupil achievement and educational growth when we change what happens in the classrooms of gifted pupils? All the evidence we have been able to muster indicates that there are significant gains in achievement, specifically in the areas of word knowledge, reading, and mathematics. The pupils achieved highly significant gains in all areas not only in growth over a one-year period, but also in comparison with a national norming population of high achievers. The ages of the pupils did not permit too extensive testing in other areas, but it is our belief that they very likely did make significant gains in those as well, judging by parental reports of the children's growth in other aspects of the curriculum.

These gains were combined with very favorable pupil attitudes toward specific aspects of school, including teachers, learning, classmates, reading, mathematics, class discussions, and school in general.

Parents reported that their children received long-lasting benefits by attending the Astor Program. They gave a long list of such gains and cited, particularly, the love of learning, enthusiasm for school, response to challenging experiences, increased self-assurance, positive self-esteem, broadened interests, increased sociability and acquisition of many friends. Almost every parent mentioned something in response to this question.

Parents further reported that there were affective gains as well as cognitive growth. Parents noted that the children were happy in school, had acquired many friends, liked their teachers and classmates, were eager to go to school, and were enthusiastic about learning. It

was the rare parent who reported any truly negative reactions on the part of a pupil to the Astor Program experience. Even these joined the other parents in a unanimous opinion that the Astor Program should be continued, preferably, of course, under the ideal conditions established by private funding.

The reality is that even though we have demonstrated how much the young gifted child can accomplish under conditions established by the Astor Program, we cannot implement all the practices we introduced due to the limitations of most school budgets. But, we now have a clearer idea of what our goals should be, we can try to come as close as possible to attaining them, and we have assurance that they really are attainable.

Our conclusion, then, is that yes, our intervention into the early education of these very superior gifted children did make a substantial difference in both the affective and cognitive domains. It is our earnest hope that the effects of the gains will persist throughout their educational lives.

PROBLEMS OF THE TRANSITION

Our major concern as the private funding ended was whether the program could survive the change from the highly focused supervision it had had under a central director to local control, if the necessary monies were made available by the districts. We wanted to know how the program would be funded and how it would be implemented in the classrooms. Each of the following was a topic of concern:

Financing

Pupil identification

Pupil follow-up

Promotion policies and acceleration

Teacher selection

Teacher training

Class size

Classroom practices and management

Role of the school principal

Continued application of the Astor Program philosophy

Financing

During the period of private funding, the Astor Program was almost totally self-contained. Salaries, fringe benefits, supplies, materials, equipment, transportation, etc., all were paid by the grant. Costs for the program were transferred to the local school districts when the major funding ended. Of course, most of the classrooms had been furnished and supplied with the extra equipment we deemed necessary, and these remained in place.

Most of the school districts absorbed the costs out of their regular budgets. Some applied for federal and state grants to supplement their own finances. All were aided by the city's newly developed policy of allocating funds for the gifted to each school district.

Because of its excellent reputation, proposals stating explicitly that they are planning to replicate the Astor Program usually meet with favor from funding sources. Thus, one district received a grant of over $400,000 to start eight classes; another will receive almost one million dollars to start work at four magnet schools. The city supports any plans to expand Astor Program activities.

Pupil Identification

Generally, all districts have continued Astor Program practices of pupil identification by individualized testing, using the Stanford-Binet. As they begin to restrict their services to their own districts, rather than the entire borough, they broaden the eligibility range of IQ's, so that the lower limit is closer to 130. This, of course, is due to the statistical

fact that one cannot expect to obtain many children in the upper reaches of ability as the population sampled is reduced in size. Also, districts are trying to reach more children in their local areas. Thus, they tend to reach the upper 2 percent of ability levels. Because of lack of funding, there is not the thorough pre-screening and extensive interviewing practiced by the Astor Program. This leads, of course, to problems of pupil placement and continuation in the program.

Pupil Follow-Up

The lack of funding, combined with the dispersal of central responsibility, has also carried over to the area of pupil follow-up. The Astor Program was deeply concerned with the emotional and social factors in the child's life that could have an impact on his learning and behavior in school. We kept careful records and were usually aware of special problems facing individual children. We also made accommodations for these to our classroom expectations.

In most schools during the transition, there was the conventional concern with the children, but not the highly individualized attention that we had given. For example, one child was achieving rather poorly. The teacher felt that he should be transferred to a less demanding class. Had she, or the school, or the district supervisor called us, we could have provided background about the child. His mother was dying and his father was ailing, too. The boy was too upset to pay much attention in class. The last thing he needed was a disruption in his school assignment. Unfortunately, his class was changed, thus separating him from classmates he had known for three years. Ultimate catastrophe came when both his mother and father died. Under our supervision, we would have considered achievement a very minor

goal in comparison with the child's immediate need for solace and security.

Schools have not availed themselves of the information that was easily and readily accessible to them. I suspect that egos, administrative independence, a generally less personal approach pervades most schools in large urban areas, which is reflected in non-involvement.

Promotion Policies and Acceleration

Districts, and schools, did follow the general patterns of our acceleration and promotion policies, although it was necessary to send them reminders at the end of the year. Most classes moved up as a group. Children who were accelerated because of early admission (4 years to 4 years 7 months) were allowed to advance a year. Others, who seemed to need the more advanced work and could cope with older children, were moved ahead. However, no child was accelerated more than one year from pre-kindergarten through grade 6.

Teacher Selection

During the first year of transition, we were quite disappointed by some of the teacher selections. A few were selected who had no conception of how to handle these children, whose expectations were unreasonable, and who were basically not at all sympathetic to the gifted child.

The choices had been made either because of carelessness on the part of administrators or because of union restrictions and political necessity. And, the teachers received no advance briefing on what was expected of them.

From my own point of view, this was inexcusable. I had managed for several years to select teachers with all the restraints now acting upon these administrators, and had managed to pull together an excellent staff. Of course, the results of such poor staffing were soon obvious to everyone, as the children reacted unfavorably and as parents resorted to the most convincing action - they withdrew their children and transferred them to other schools, after entering vigorous protests.

By the beginning of the second year, there was a change, and teachers were selected more effectively, while the failures of the previous year were allowed to transfer elsewhere.

The importance, furthermore, of orientation for the teachers was made evident by these experiences.

Teacher Training

Until the practices of the Astor Program become more commonly known in teacher training institutions and elsewhere, the importance of continuous in-service training cannot be too strongly stressed.

The Astor Program continued the teacher training sessions through the past two years of transition. In the future, such training will be available as a graduate course to be given at Teachers College, Columbia University, to be attended on a voluntary basis and for university credit.

Administrators must be convinced of the importance of such training. In one district, teachers were not permitted to attend the training sessions because there was no money for substitute teacher service. The alternative,

dismissing classes for the day, was too revolutionary a concept for the district administrator to countenance. Such short-sightedness is deplorable, but illustrates some of the problems that beset a program as it moves into supervisory domains other than that of the creator.

Class Sizes

The Astor Program benefitted from a happy coincidence in the city's educational history. The new chancellor is an advocate of smaller class sizes during the early years. Thus, it was possible for the schools to retain and even reduce class registers for the early classes.

However, in one school, for children in upper classes, grades 4, 5 and 6, the registers are preposterously large - 36, 38, and 43 per class. Since the teachers have no assistance, this makes implementation of a highly individualized program very difficult. And yet, this school is most anxious to continue and expand Astor Program philosophy into all its classes for bright children at all levels.

Classroom Practices

With the exceptions noted in terms of poor teacher selection and excessive class sizes, the classroom practices introduced by the Astor Program have continued and they have spilled over into other classes as well. Most of the teachers continue to individualize, work in small groups, allow much independence of activity and freedom of movement. The level of work is high and consistent with pupil capacities. Spontaneity and flexibility characterize the work plans.

Children engage in vigorous discussion, follow self-planned schedules, work in a relaxed and happy manner. They follow through on special interest topics. These are some that are of current concern:

Chinese Scrolls - museum exhibit

Architecture - geodesic structures

Stock exchange

Insects - inventing their own

Comparison of Alaska - Mexico - New York

Soil - analysis before planting

Division of labor in our neighborhood

Stories dictated to teacher

Death - discussion and using stories,
i.e. Indian Grandmother

U.F.O's

Colonies

Sign language

Neutrality - Switzerland in World War II

Parks

Anatomy of a grasshopper

Sonar animals

Space vocabulary

Telescopes - making their own

Contracts for assignments

Relief map of neighborhood

There are always the exceptions. In one school, where we noted unusual rigidity in the classroom and a startling lack of interest and activity centers, we were told that "the custodian and the principal" do not approve of these, since they make the classroom look too cluttered and are hard to clean. No program can really survive against such fastidiousness or the individual biases of administrators. This same principal can easily tolerate a teacher whose sole approach is to stuff the children with information in a formal, no nonsense manner, that betrays her own insecurity with the fun and joy of learning.

Use of Resource Teachers

Carrying on in the patterns of the Astor Program, schools use resource teachers in special subject areas: art, music, library, foreign language. However, only about one-half take advantage of the more significant procedure, to permit the regular teacher to remain in the room while the special subject is taught. Too often the special subject is taught when the regular teacher takes her union-regulated "prep" periods. A second digression of which we do not approve is the haphazard form foreign language teaching takes. Teaching a language for which there is no reinforcement and less continuity is a waste of time.

Role of the Principal

Generally, principals have taken over the Astor Program in their schools and are eager to implement it and make it succeed. Although they do not have the time to give it the supervision it requires, they are eager for their

teachers to be trained and apply our practices. With only one exception, I have found that most principals are devoted to the principles of the program and want it to flourish in their schools.

GENERAL COMMENT

I am pleased to observe that the seeds we planted have not only germinated but they have blossomed and are in a healthy and vigorous state. They are sending shoots to neighboring vineyards, and I feel somewhat secure in the knowledge that most of our ideas are here to stay. I think we have changed the thinking of education at the early school level to the point that I doubt whether we will ever again postpone learning experiences on the basis of chronological age alone. The Astor Program has demonstrated how much can be done with very young children, how much they can learn if only we will give them the chance. As is characteristic of many programs for the gifted, there is the spillover effect to other classes and to children of all levels of ability. Many of the classroom practices sponsored by the Astor Program can, in modified form be carried over to other classes with good promise of success.